PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 344455D20128	**FOR FURTHER ACTION**	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/IB 03/01374	International filing date *(day/month/year)* 13.03.2003	Priority date *(day/month/year)* 13.03.2002
International Patent Classification (IPC) or both national classification and IPC C07K14/38		
Applicant BAYER CROPSCIENCE SA et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 7 sheets, including this cover sheet.

   ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the opinion
   - II ☐ Priority
   - III ☒ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☒ Lack of unity of invention
   - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
06.10.2003	23.06.2004
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Niebuhr-Ebel, K Telephone No. +49 89 2399-7814

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/IB 03/01374

I. Basis of the report

1. With regard to the **elements** of the international application *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*:

Description, Pages

1-80 as originally filed

Claims, Numbers

1-29 as originally filed

Drawings, Sheets

1/1 as originally filed

S quence listing part of the description, pages:

1-169, as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

   These elements were available or furnished to this Authority in the following language: , which is:

   ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).

   ☐ the language of publication of the international application (under Rule 48.3(b)).

   ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

   ☒ contained in the international application in written form.

   ☒ filed together with the international application in computer readable form.

   ☐ furnished subsequently to this Authority in written form.

   ☐ furnished subsequently to this Authority in computer readable form.

   ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

   ☒ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

   ☐ the description, pages:

   ☐ the claims, Nos.:

   ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

   (Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

   ☐ the entire international application,

   ☒ claims Nos. 1-13 (in part) and 27-29

   because:

   ☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (specify):

   ☒ the description, claims or drawings *(indicate particular elements below)* or said claims Nos. 2, 3 and 9 are so unclear that no meaningful opinion could be formed *(specify)*:

   see separate sheet

   ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

   ☒ no international search report has been established for the said claims Nos. 1-13 (in part) and 27-29

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

   ☐ the written form has not been furnished or does not comply with the Standard.

   ☐ the computer readable form has not been furnished or does not comply with the Standard.

IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees, the applicant has:

   ☐ restricted the claims.

   ☐ paid additional fees.

   ☐ paid additional fees under protest.

   ☐ neither restricted nor paid additional fees.

2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

☐ complied with.

☒ not complied with for the following reasons:

see separate sheet

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

☐ all parts.

☒ the parts relating to claims Nos. 1-13 (partially), 14-26 .

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-13 (partially), 14-26
	No:	Claims	
Inventive step (IS)	Yes:	Claims	14-26
	No:	Claims	1-13 (partially)
Industrial applicability (IA)	Yes:	Claims	1-13 (partially), 14-26
	No:	Claims	

2. Citations and explanations

see separate sheet

R Item III

Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

III.1. Claims 2 and 3 (orthologous sequence) refer to nucleic acids comprising nucleotide sequences encoding "a biologically active fragment" of an EGF polypeptide, and the subject-matter of claim 9 is "a biologically active polypeptide". The term "activity" is very broad and can encompass biological activities such as binding activity, immunogenic activity etc., which virtually any polypeptide exhibits. Furthermore no function or activity of the present sequences has been established in the present application, but only a prediction based on homology searches. Consequently, the scope of claims 2, 3 and 9 is too unclear be examined in that respect (**Art. 6 PCT**).

III.2. Present claims 27-29 relate to a composition comprising products defined by a parameter or property, namely the ability to bind to the claimed molecules or act either agonistically or antagonistically. The use of this parameter in the present context is considered to lead to a lack of clarity within the meaning of **Art. 6 PCT**. It is impossible to compare the parameters the applicant has chosen to employ with what is set out in the prior art. For this reason claims 27-29 have not been searched and will, accordingly, not be examined.

III.3. Following a non-unity objection, claims 1-13 have only been searched in part (see Item IV). Accordingly, an opinion can only be established with respect to the searched subject-matter.

Re Item IV

Lack of unity of invention

IV.1. The present application does not meet the requirements of Rule 13.1 PCT, because the IPEA agrees with the objection put forward by the Search Division that the subject-matter of the claims lacks unity. 21 separate inventions have been identified, and only the first invention relating to a putative ATP-dependent RNA helicase from Aspergillus fumigatus (SEQ ID NOs: 1-3) has been searched and will, consequently, be the subject-matter of examination.

Re Item V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

The present application relates to an "Essential For Growth" (EGF) protein from Aspergillus fumigatus and its use as a potential antifungal target. Furthermore an in vivo transposon mutagenesis system for A. fumigatus has been developed, which allows to perform genomewide identification of essential genes.

Reference is made to the following document:

D1: TIMBERLAKE W E: 'CLONING AND ANALYSIS OF FUNGAL GENES' MORE GENE MANIPULATIONS IN FUNGI, XX, XX, 1991, pages 51-85, XP002910123

Novelty (Art. 33 (2) PCT)

V.1. Assuming that the priority is valid, the sequences depicted in SEQ ID NOs 1-3 and, accordingly, claims 1-13 appear novel in the sense of **Art. 33 (2) PCT.** Please note point VI.
Novelty is also acknowledged for claims 14-26 relating to an in vivo transposon mutagenesis system for A. fumigatus.

Inventive Step (Art. 33 (3) PCT)

V.2. The problem to be solved by claims 1-13 can be formulated as the provision of a polypeptide that is essential for growth in Aspergillus fumigatus. The solution to the problem is a protein, which shows 43% identity to a human ATP-dependent RNA helicase (SEQ ID NOs 1-3).

V.3. Since no specific function of the sequences has been established and no working example has been provided in the present apllication, the subject-matter of claims 1-13 is not considered to fulfill the provisions of Art. **33(4) PCT** in combination with

Rule 5 (1)(vi) PCT.

V.3. Claim 14 relates to a method for locating genes essential for the growth of a haploid fungus involving the generation of a diploid strain, mutagenesis of said strain and haploidisation of the diploid transformant, wherein mutagenesis is performed by in vivo transposon mutagenesis.

V.4. The closest prior art is considered to be D1, which provides an overview over the genetic manipulation of the genetic manipulation of filamentous fungi.
The advantage of the method disclosed in the present application is the possibility to characterize A. fumigatus genes necessary for efficient fungal growth without prior sequence information by random insertional mutagenesis. This method allows a large-scale genomic approach and is considered an improvement over the prior art. Therefore the presence of an inventive step is acknowledged for claims 14-26, which therefore meet the requirements of **Art. 33 (3) PCT.**

Re Item VI
Certain documents cited

Certain published documents (Rule 70.10)

Application No Patent No	Publication date *(day/month/year)*	Filing date *(day/month/year)*	Priority date *(valid claim)* *(day/month/year)*
WO02086090	31.10.2002	23.04.2002	23.04.2001 27.04.2001 05.06.2001 09.07.2001 31.08.2001